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August 27, 1987

Rodger Field, Esquire
Associate Regional Counsel
Region V
United States Environmental
Protection Agency
230 South Dearborn Street
16th Floor
Chicago, Illinois 60604

Dear Rodger:

Enclosed is the supplement to the June 30 letter from J. Roger Crawford of Outboard Marine Corporation to Mr. Adamkus, which you requested at our July 6 meeting. We look forward to discussing our demonstration that an upland PCB disposal facility is not available based on technical, economic and environmental factors under 40 CFR § 761.60(a)(5) at our next meeting scheduled for August 31, 1987.

↳ JPC only.

We are also hereby confirming our understanding that this document, like the June 30, 1987, document, is submitted in the context of settlement negotiations and is confidential. OMC looks forward to a continued dialog with EPA towards resolution of the issues associated with the Waukegan Harbor site.

Very truly yours,

JEFFREY C. FORT

JCF:ama

Enclosure

OMC

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OUTBOARD MARINE CORPORATION

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Phone 312/689-6200
Telex 025-3891

August 27, 1987

Rodger Field, Esquire
Associate Regional Counsel
Region V
United States Environmental
Protection Agency
230 South Dearborn Street
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Chicago, Illinois 60604

Re: Outboard Marine Corporation:
Waukegan Harbor NPL Site

Dear Rodger:

This letter provides the information that you and other EPA personnel requested at our meeting of July 6, 1987, and is intended as a supplement to my letter to Mr. Valdas Adamkus, Regional Administrator, dated June 30, 1987. The information is submitted to support a determination under 40 C.F.R. § 761.60(a)(5)(iii) that no "upland disposal facility" is available for disposal of the PCB-contaminated sediments and soils at the Waukegan Harbor NPL site.

OMC believes, based on the information contained herein and my June 30, 1987, letter, that the Regional Administrator should determine that an upland disposal facility is not reasonable or appropriate based on economic, environmental and technical considerations. OMC also believes that the IPC proposal should be accepted by EPA as complying with the TSCA PCB landfill regulations and, to the extent necessary, a waiver is appropriate. Dredging and dewatering associated with an

upland disposal facility, as called for in the Record of Decision, will create releases of PCBs from the site to the Harbor and the Lake. While there is no evidence of any adverse effect on health associated with the present site conditions, implementation of the upland disposal alternatives (ROD or Zion) considered herein would have significant adverse economic effects on the Waukegan community, near-Harbor businesses, units of local government, the public, and OMC. The Waukegan area will also be deprived of recreational benefits presently provided by boating facilities in the Upper Harbor and by the public beach. In addition, the use of an upland facility, without any special handling of "hot spot" areas of contamination, is estimated to cost from two to three times the cost of the IPC approach. Moreover, use of the Zion site will raise many issues that would likely create substantial implementation delays.

At our July 6 meeting, EPA representatives identified the parameters for this document. You stated that this submission was to focus on a showing that the two alternate "upland" disposal facilities described herein are not "available" (i.e., are not reasonable and appropriate disposal options based on technical, economic and environmental considerations). You further stated that if OMC makes this showing, OMC may reasonably assume, and you will recommend, that the Regional Administrator further determine that [neither incineration nor offsite disposal of Waukegan Harbor sediments and soils at any currently permitted PCB landfill is reasonable and appropriate. OMC agrees with this approach.

- NO
- YES

As requested, we prepared information with respect to two potential upland disposal sites: the OMC property, and a site near Zion, Illinois (the "Zion site"). The potential OMC site is described in the Record of Decision (ROD) approved by EPA on May 15, 1984. The Zion site is described (as Site 4) in the Corps of Engineers' "Confined Dredge Disposal Area Site Selection Study," April 1984 (Attachment C of OMC's June 30 submission to EPA). To the extent possible, we have also discussed the ramifications of seeking participation by the Corps of Engineers in joint disposal of Waukegan Harbor sediments.

good

We note that the requested information was prepared in a short period of time and consequently may not include all costs and other factors relevant to development of an upland disposal

facility at the OMC or Zion site. Taken together, however, we believe that the information submitted to date is more than sufficient to support approval or OMC's IPC proposal as an "alternate disposal method" under 40 C.F.R. § 761.60(a)(5)(iii).

If EPA does not approve IPC as an alternate disposal method, OMC reserves its right to pursue IPC as a chemical waste landfill under 40 C.F.R. § 761.60(a)(5)(ii), and to seek a waiver of certain chemical waste landfill requirements under § 761.75(c)(4). We submit that the information now in the possession of EPA is sufficient to grant such a waiver, subject to minor refinement of design details.

The remainder of this letter discusses the items that EPA stated were of interest. First basic assumptions on waste volume and facility configuration are presented. The potential OMC and Zion sites are then described, and the costs, impacts and limitations of using each site are discussed. The information presented with respect to each site includes:

- the costs of constructing a chemical waste landfill, and necessary related structures, on the site;
- the impacts of construction and operation on OMC business operations;
- the impacts of construction and operation on Larsen Marine and other businesses that rely on the Harbor;
- the impacts on other planned uses of the subject property; and
- the impacts on uses of the public beach.

With respect to developing a new offsite chemical waste landfill at the Zion site, this letter also addresses the additional handling costs and problems, the transportation costs and risks, the costs of land acquisition, and the ramifications of the permitting process. As requested by EPA, issues concerning involvement of the Corps of Engineers are also discussed.

This letter also notes the risks of dredging involved in the use of either an onsite or an offsite upland disposal facility, and addresses certain questions raised by EPA

concerning modifications to the dredging and other procedures described in the 1984 ROD. Tables are provided that summarize the presently identifiable impacts of "upland disposal" and, where available, the costs associated with each impact.

I. Assumptions Used with Respect to the "Upland" Disposal Sites

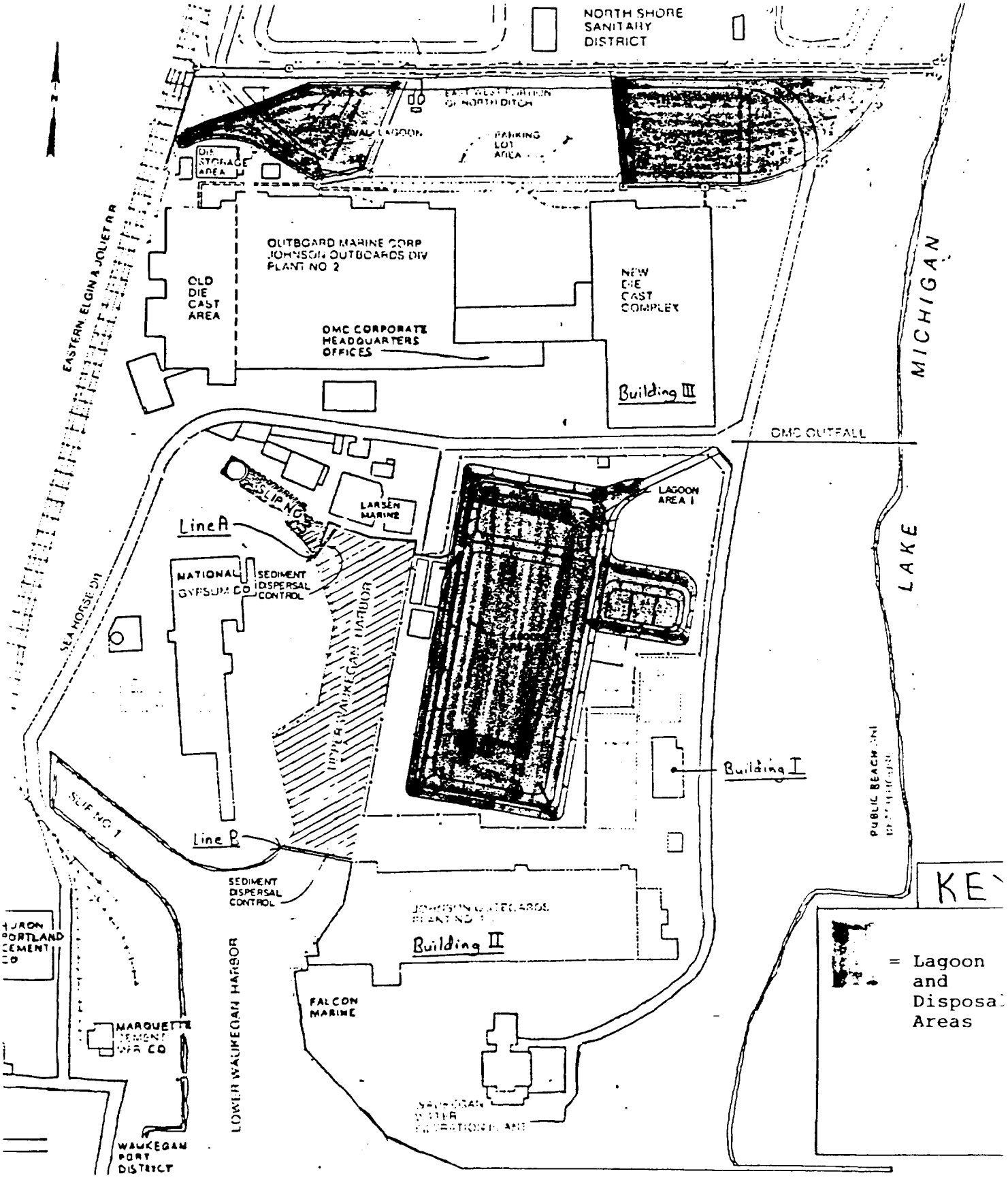
A. Basic Assumptions on Waste Volume and Site Configuration

One basic determinant of the cost and feasibility of using an onsite or offsite upland disposal facility is the volume of materials to be handled and disposed. EPA suggested at the July 6 meeting, and OMC has assumed, that all sediments and soils contaminated with more than 50 ppm PCBs would be placed in the disposal facility. In this document we have assumed the estimate presented in the Record of Decision of 220,000 yards of material containing more than 50 ppm PCBs is accurate. However, this estimated quantity does not include the added volume for fixation materials as identified in the Conceptual Design or the added volume of contaminated material which would result from the removal and disposal of the dewatering lagoons and related structures. Furthermore, uncertainty exists regarding the actual volume of contaminated materials that exceed 50 ppm, particularly in the Oval Lagoon, Crescent Ditch and North Parking Lot areas. The upland disposal facility estimates have included a design contingency for these uncertainties. In addition, the estimates assume that 150,000 yards of spoil may be generated by the Corps' dredging activities. Thus, the cost estimates for the disposal vaults assume a design capacity ranging from 270,000 to 420,000 cubic yards.

This analysis assumes that an upland disposal facility on the OMC property will follow the general configuration adopted by EPA in the 1984 ROD. Given the review of numerous conceptual designs that took place during EPA's source control feasibility study, this assumption is reasonable. Similarly, for use of the Zion site, we assume that the dewatering lagoons will continue to be placed adjacent to the Harbor, as planned in the ROD.

Figure 1

Map of Waukegan Harbor Area Showing Relationship of Proposed Silt Curtains, Dewatering Lagoons and On-Site Disposal Area to Various OMC Buildings and Other Near Harbor Businesses



B. Descriptions of the Sites

1. The OMC Lakefront Site

The "upland disposal" site considered here follows the same site layout indicated by the Record of Decision. Dewatering facilities, including two earthen dewatering lagoons, would be constructed adjacent to the Upper Harbor. These lagoons are shown on Figure 1 hereto (Figure 2-1 of the Conceptual Design dated September, 1984, by CH2M Hill) as occupying land between the Upper Harbor and the public bathing beach on Lake Michigan, immediately north and west of the OMC data processing center (Building I on Figure 1), and slightly over 100 feet south of OMC's die casting facility (Building III). The ultimate disposal area lies to the north of the OMC Plant 2 (which includes the die casting building), in the area presently occupied by OMC's parking lot for Plant 2 employees. This "site," then, includes all of Site 16 in the Corps CDF study, as well as the area indicated on Figure 1 as the OMC parking lot.

2. The Zion Site

The Zion site is located to the west of the town of Zion in Lake County, approximately twelve miles by road to the northwest of Waukegan Harbor. It consists of 78 acres of gently-sloping to steeply-sloping agricultural land located about 700 feet above sea level. The soil has a moderate to moderately slow permeability; bedrock is about 200 feet below the surface. The site is adjacent to a sanitary landfill operated by Browning-Ferris Industries. Approximately 30 acres of the Zion site are expected to be needed for the Harbor material.

II. Costs and Impacts of Upland Disposal at OMC Lakefront Site

A. Construction Costs for Upland Disposal at OMC Lakefront Site

OMC has obtained from a qualified engineering firm, Canonie Engineers, an estimate of the costs of constructing the facilities required to implement the upland disposal facility contemplated by the 1984 ROD (and by related documents outlining Alternative 6D). The estimate is in 1986 dollars and

utilized 1986 prices. As agreed, the estimate assumes that all sediments and soils contaminated with more than 50 ppm PCBs would be placed in the disposal facility, i.e., that there would be no offsite disposal or special handling (other than fixation) of the materials over 10,000 ppm PCBs. (Obviously, any such handling would increase the total cost of disposal.) In addition, the cost estimate is based on EPA's assumed volumes, where such volumes are stated or may reasonably be inferred.

The cost estimate includes several items that appear to have been overlooked in the original 1984 estimate of remedial costs. Some items were left out of the ROD description of remedial elements, while others were discussed but not assigned a cost. These items include lateral bracing of the sheeting in Slip 3 before dredging, a cement batch plant for mixing fixation materials, a curing cell, fixation of selected materials from the North Ditch area to control volatilization, well point systems for maintaining an inward gradient in the Oval Lagoon and Parking Lot containment cells, and dikes of the appropriate height (14 feet) for the Parking Lot containment cell.

Table I lists the elements of the upland disposal facility at the OMC site and their associated costs. As shown by the table, the total cost for the onsite upland disposal facility would be $23,379,000. This cost alone indicates that an upland disposal facility at Waukegan Harbor is not reasonable and appropriate, particularly given the availability of a functional equivalent, the IPC concept, at a cost of less than $15 million.

B. Impact on Near-Harbor Businesses and Public Activities

Removal of PCB sediments from the Harbor, regardless of which of the two "upland" sites is considered, would entail the use of dewatering facilities prior to final disposal. According to EPA's estimates, this removal would require dredging and dewatering of over 47,000 yards of muck, sand and clay sediment containing over 310,000 pounds of PCBs. See generally, Mason & Hanger, "Second Addendum to Final Report," Table II (March, 1982), which follows as Table II. Any plan to remove this quantity of PCBs, dewater the dredged spoil, and dispose of the spoil in an "upland facility," poses severe environmental, technical and economic problems. In the June 30

TABLE I

COST ESTIMATE
EPA RECORD OF DECISION PROGRAM
WITH ON-SITE DISPOSAL OF
SOIL AND SEDIMENT WITH
GREATER THAN 10,000 PPM PCBS
FALL, 1986 PRICES

Item	Action	Estimated Cost
1	Selected Excavation of Slip No. 3 (Sub-Alternative 1) · Isolation and Dewatering · Excavation · Fixation · Disposal · Water Treatment	$ 2,844,000
2	Slip No. 3 and Upper Harbor Dredging (Alternative 6D) · General Site Preparation · Dewatering Lagoon Construction · Curing Cell Construction · Cement Batch Plant · Water Treatment Plant · Silt Curtain · Dredging, Select Fixation · Lagoon Removal	11,047,000
3	North Ditch, Oval Lagoon, Crescent Ditch Cleanup (Alternative 4B) · General Site Preparation · Well Point System · Water Treatment · North Ditch Sheeting and Excavation · Storm Sewer Bypass · Slurry Wall Construction · Site Capping · Install Internal Dewatering Wells · Monitoring Wells	4,873,000
4	Selected Excavation of Oval Lagoon and Crescent Ditch (Sub-Alternative 1) · Excavation · Fixation · Disposal	1,168,000

Table I
(Continued)

Item	Action	Estimated Cost
5	Parking Lot Cleanup/Containment (Alternative 4) • General Site Preparation • Slurry Wall Construction • Construct Containment Cell • Install Riprap • Dewatering Wells • Site Capping • Paving • Monitoring Wells	3,447,000
	TOTAL	$23,379,000

TABLE II

PCB CONTAMINATION IN SEDIMENTS IN WAUKEGAN HARBOR

CONTAMINATION IN UPPER SEDIMENTS (MUCK)

Location	Average ppm PCB	Average % Solids	Average Depth (ft.)	Amt. of Contaminated Sediment Cubic Yds. Muck	Lbs. of PCB
A1	54,960	69.6	4.73	1,261	116,822
A2	31,318	53.0	2.96	789	31,718
A3	7,446	74.5	1.32	508	6,825
A4	7,446	74.5	1.80	553	7,430
A5	1,737	52.0	2.21	1,125	2,461
A6	538	50.5	1.61	2,939	1,934
Total A1-A6 (Muck)				7,175 cy	167,190 lbs.
B1	183.2	48.9	2.98	5,510	1,195
B2	152.1	41.1	4.95	11,550	1,749
B3	96.6	45.6	4.28	14,825	1,582
B4	103.2	52.8	3.25	3,792	500
B5	30.0	50.9	1.16	1,390	82
Total B1-B6 (Muck)				37,567 cy	5,108 lbs.
C1	18.2	35.8	3.23	11,855	187
C2	18.8	59.8	2.63	15,219	414
C3	13.6	53.3	4.61	25,253	443
C4	19.7	46.6	5.7 est.	23,351 est.	519
C5	13.3	53.9	3.7 est.	34,958 est.	607
C6	12.0	58.2	2.65 est.	9,815 est.	166
Totals C1-C6 (Muck)				120,451 cy	2,336 lbs.
D1	9.7	75.2	0.5 est.	2,200 est.	39
D2	6.3	75.4	2.0 est.	7,637 est.	87
D3			1.0 est.	8,533 est.	98
Total D1-D3				18,370 cy	224 lbs.
Overall Totals per Muck				183,563 cy	174,858 lbs.

Slip #3 Contamination in Deep Sediments (Sand & Clay)

Cubic yards deep contamination:	2,250 (sand) cy 1,450 (clay) cy
Average PCB Conc. deep contamination:	23,000 ppm (sand) 1,100 ppm (clay)
Total Amount PCBs in deep Contamination:	138,000 lbs
Total Muck plus sand plus clay:	187,263 cy 312,858 lbs. PCB

The pounds of PCBs in locations A1, A2, A3 and A4 may vary significantly depending upon how core borings are grouped and averaged.

submittal and in Section IV of this letter, we review some of the technical and environmental problems associated with such a dredging operation. In this section, we will address the potential economic effects of attempting to dredge, dewater and load into trucks for upland disposal these PCB-contaminated sediments which would not require handling in this manner under the IPC proposal.[1]

The first issue that must be considered is the duration of such a project. A review of the Conceptual Design for the Record of Decision remedy ("upland disposal" at the OMC Lakefront site) discloses that CH2M Hill expected that the Upper Harbor would be closed to boating from April until September -- an entire boating season -- and that the dewatering lagoons would remain open for two years. OMC believes that the economic factors associated with this action, which the Record of Decision failed to take into account, must be considered by EPA in determining whether an upland disposal facility is reasonable and appropriate. Moreover, OMC believes that the impacts of dredging for "upland disposal" has many more impacts than suggested by the Conceptual Design of CH2M Hill.

The Record of Decision calls for construction of earthen lagoons adjacent to the Upper Harbor. Dredging of the Upper Harbor will necessitate construction of three separate facilities for the purpose of minimizing direct discharge of resuspended sediment to the Lake during dredging: a cofferdam in Slip 3, and two "sediment dispersal control devices"--one at the mouth of Slip 3 (line A on Figure 1), and one at the boundary of the project (line B). CH2M Hill's schedule called for these devices to be installed by early April, and remain in

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[1]The IPC concept calls for this dewatering to occur in Slip 3, and within the area which will become the final containment cell for PCB-contaminated Harbor sediments. Under the approach, sediments with contamination levels greater than 500 ppm will not be dredged or otherwise handled; only sediments with contamination in the range of 50 to 500 ppm will be dredged and dewatered for disposal. This area represents less than two per cent of the total PCB mass estimated in the Harbor.

place until dredging is completed. The schedule assumed dredging could be completed by September, allowing for a 12-week dredging program using a hydraulic 3,000-gpm dredge.

OMC has reviewed these dredging assumptions and believes they are unjustifiably optimistic.

- A cutterhead hydraulic dredge with a capacity of 3,000 gpm is to be used. The dredged spoil will contain at least 80% water and at most 20% solids at the discharge to the lagoons. With 35,500 yards of sediment from Slip 3 and the Upper Harbor to be removed, OMC would expect the total volume of dredged spoil delivered to the lagoons to be 177,500 cubic yards. There are only 118,000 cubic yards of storage in the two lagoons (Conceptual Design, pp. 2-20). OMC believes that the lagoons are too small to handle the volume of dredged spoil and water likely to be generated.

- The water treatment plant has a design capacity of 1,500 gpm. Id., p. 2-11. Any unanticipated malfunction in the water treatment plant would cause idle time for the dredge, and project delays.

- The material to be dredged is primarily muck. This material is very fine and unlikely to settle quickly. After one day of dewatering in a lab test, the spoil still had a moisture content of 250 percent, and a volume of 175 percent of its in situ estimated volume. Id., p. 2-19. OMC has been advised by its consultants that the spoil in the dewatering lagoons is unlikely to settle as quickly as assumed by the Conceptual Design.

Therefore, because of limitations on lagoon capacity, dredging inefficiency, excessive water handling, and limited water treatment capability, OMC agrees that the upper Harbor would remain closed for at least an entire boating season. Moreover, because of slow settling rates, OMC believes that dewatering would take substantially longer than the two years indicated by the Conceptual Design.

The following sections detail the impacts of Upper Harbor closure and the lengthy dewatering process on the near-Harbor activities of OMC, other companies, and the general public.

Effects on OMC

The dredging and dewatering scenario envisioned for the "upland facilities" discussed here would pose a serious threat of disruption to OMC operations. The operations of OMC in Waukegan which would be affected include the data-processing operation (Building I on Figure 1), the Outboard Marine Engineering facilities (Building II), the die cast facility (Building III), and potentially all Lakefront operations of OMC. Shipments of components, raw materials, and products, as well as workers at the manufacturing facilities and administrative offices, would also be impacted.

Building I houses the world-wide data-processing center for Outboard Marine Corporation. These activities would be affected by upland disposal in two ways. First, the heavy earth-moving equipment necessary to construct and dismantle the dewatering lagoon would create vibrations. These vibrations would create a significant likelihood of harm to facility operations and could result in a loss of data or program malfunctions. Second, the dust created by the construction activities would exceed the capacity of the air filtration system at the center, which again could lead to computer malfunctioning. In addition, although OMC does not believe that a health risk exists, employees assigned to this location could be affected by the site safety plans and other actions relating to workplace safety as described below. The most feasible approach to abating any perceived risk of injury created by this activity would be to move the data-processing center to another location. The cost of such a move is estimated at $2.5 million, and would take at least six months to accomplish once a decision to move the facilities was made.

OMC's world-wide engineering and design center is located in Building II. This facility provides essential product design and testing and support for OMC's manufacturing, marketing and customer services activities. Like Building I, operations in Building II could be affected by an "upland disposal" option from the site safety plan likely to be employed by any remediation contractor, and by the perceived health threat due to volatilization from the dewatering lagoons. As a condition of their own insurance, remediation contractors ordinarily establish a secure zone which precludes any person not in the appropriate protective gear from entering the active area of remediation. OMC would expect that access

along Sea-Horse Drive would be curtailed, and that no one would be allowed to pass through or be in the area while dredging, or dewatering and/or transportation activities were occurring.

Second, the Conceptual Site Health and Safety Plan (Conceptual Design, Appendix B) states, "Those [workers in areas of PCB levels] less than 1.0 mg/m^3, shall wear full face air-purifying respirators with high efficiency organic vapor/dust canisters or cartridges (respiratory equipment must be NIOSH approved)." Id., p. B-4. Consultants to OMC conducted an assessment of potential exposure to volatilized PCBs associated with the dewatering lagoons. As shown on Figure 2, their assessment suggests that the eight-hour time-weighted average exposure at various Harbor-area locations would range from 20 to 55 times the NIOSH-recommended PCB level of 1 ug/m^3. Dust resulting from dredging, drying, handling and transporting massive amounts of PCB-contaminated sediments could well constitute an even greater exposure threat. It appears that all of OMC's workers might be potentially subject to a site safety plan mandating use of respirators. And because of the perception of the type of work which would be performed (i.e., the spectre of remedial action workers in "moon suits" within a few feet of OMC's facilities), a work stoppage could occur either because the workers refuse to report or because OMC management determines it must avoid the risk of potential liability for exposing its workers to a work environment perceived to be unsafe.

their reaching here

The cost to relocate the engineering operation in Building II is estimated at $9.07 million, and an additional $3.5 million would be needed to move personnel to the new site. Moreover, at least two years will be required to move and relocate this operation. Unless ample time is available to move this operation, disruption of work at the engineering facility would affect OMC's manufacturing and marketing efforts, which depend on the resources of the engineering group and facility.

Building III houses OMC's captive die-casting operation. Critical parts for many of OMC's products are made only here. Construction and operation of the indicated dewatering lagoons might cause the shutdown of this facility in two ways. The first scenario would relate to the perception of risk in the workplace as discussed above. The air intakes for this plant are located only 19-29 feet above ground level, at the extreme

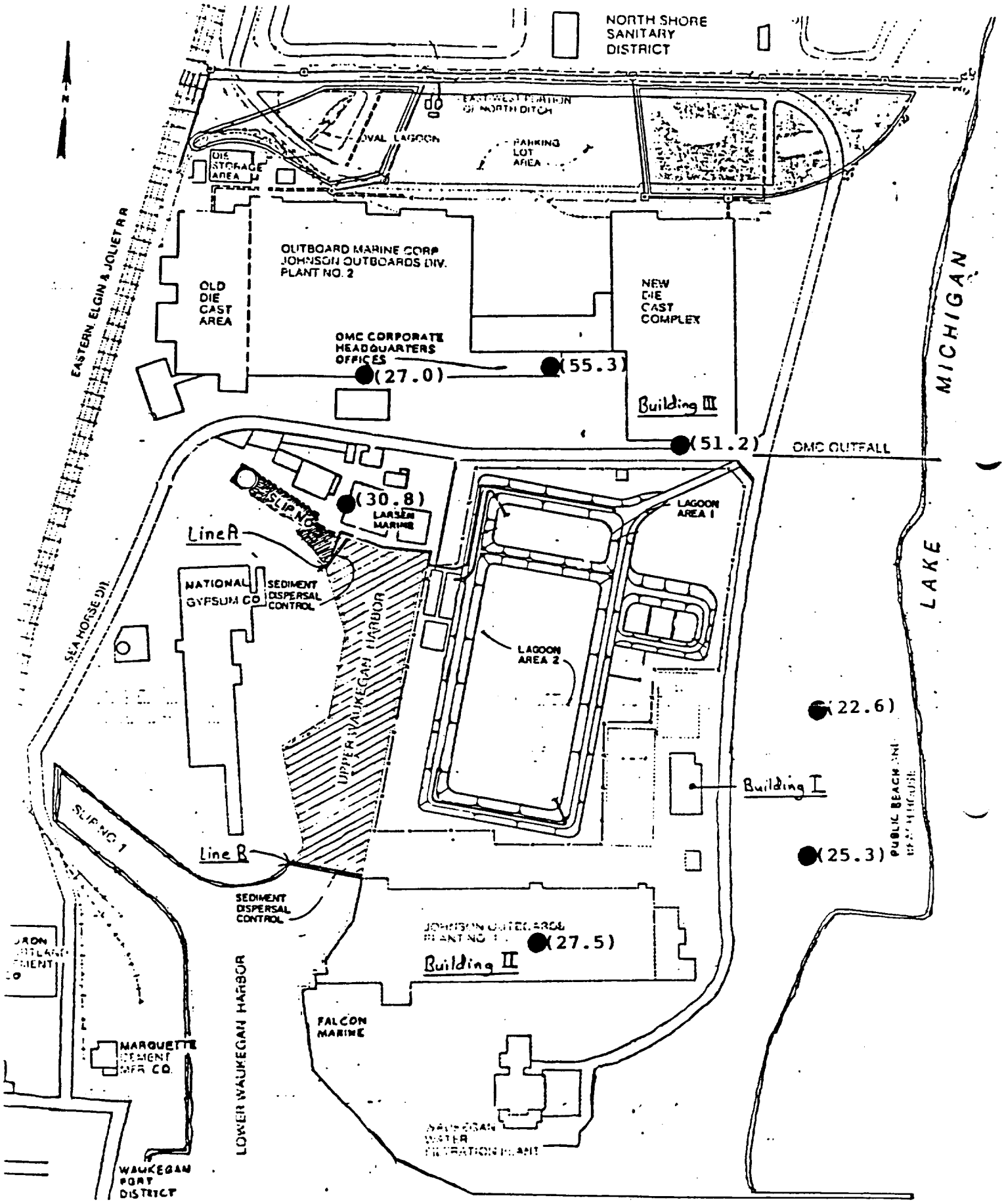
south end of Building III; these intakes would be within 100 feet of the haul road (leading to the disposal site on the north property) and within 200 feet of the "lagoon area" where the most highly contaminated sediments would be dewatered. The second possibility relates to the loss of truck access into Plant 2 which will be addressed below with respect to use of access roads and the OMC Parking Lot. OMC has investigated ways of abating or minimizing these impacts. If EPA decided to proceed with the ROD, or another upland disposal facility, it would appear that the only reliable way to produce the necessary parts for many of OMC's products would be to move the die-casting operation from Building III to another site. The estimated cost for such a move is $25.17 million, and at least 20 months would be needed to implement such a decision.

If OMC must move its corporate and marketing employees, who also work very near the Harbor in areas of projected elevated levels of volatilized PCBs, an additional five million dollars would be required.

Finally, as a general matter, the presence of safety zones and EPA employees or contractors in protective gear may cause unnecessary anxiety and concern on the part of individuals in the vicinity. Whether or not an actual health threat to individuals would exist, EPA must take such perceptions of risk, and the concomitant risk to OMC operations, into account in determining whether an upland disposal facility is reasonable and appropriate.

The above impacts would largely result from construction and use of the dewatering lagoons, which are contemplated for an upland disposal facility at either the OMC Lakefront site or the Zion site. OMC would suffer additional impacts if an upland disposal facility were located on its property, as envisioned by the 1984 Conceptual Design. In particular, transportation of dewatered sediments to a disposal vault on OMC's Parking Lot would occupy OMC access roads and impede shipments to and from OMC's plants, potentially affecting OMC operations world-wide. In addition, the dewatering lagoons and disposal cells would occupy areas now used or available for OMC employee parking. Employees must have access to the plant for it to continue operating. However, OMC does not own any other areas that are large enough to accommodate remote employee parking.

Figure 2: Ambient PCB Concentrations For An 8-Hour Averaging Time (ug/m^3)
Receptor Grid and Emission Sources



Costs and Impacts for Other Harbor Users

OMC is not the only business, nor are its employees the only people, who could be affected adversely by the EPA-proposed dredging and dewatering operation. The workers at Falcon Marine, the City of Waukegan Filtration Plant, Larsen Marine, and National Gypsum might perceive the same safety threat potentially perceived by employees of OMC. In addition, three major categories of affected uses must also be considered: Larsen Marine, those Harbor-front industries which receive shipments via the Harbor, and the public.

Dredging the entire Upper Harbor and Slip 3 could have a devastating effect on Larsen Marine. Larsen Marine has steadily increased its business over the last ten years. It has sought, and continues to seek from OMC, additional Harbor-front property for additional mooring and storage facilities. It provides many resources and essential facilities for the boating public generally and its own substantial number of customers. It now also serves many of the 500-plus boats moored in the New Harbor. Dredging would close the Upper Harbor from late winter through the next boating season. Even after the silt curtains were removed, it is questionable whether Larsen's customers would return to a facility next to huge dewatering lagoons occupied by workers in "moon suits." The IPC plan avoids these problems by constructing a new slip for Larsen and reducing the scope of dredging operations so that it can be done after one boating season ends and before the next begins.

National Gypsum and Lone Star Cement receive commodity shipments via the Harbor. OMC would expect these shipments to be interrupted as long as the second silt curtain is up (Line B). If those shipments were not abated, then wave action from the ship propellers could destroy the silt curtains and allow the movement of roiled sediments into the lower Harbor and the Lake. Thus, National Gypsum and Lone Star Cement might have to incur some cost for alternate transportation. OMC has been unable to estimate the incremental cost of alternate transportation for these industries.

Impacts on Lakefront Use

Another significant adverse effect, though not presently calculable, would be on the public. The public would be unable

to use the bathing beach while the lagoons were in use. We would expect the remedial construction to preclude any parking along Sea-Horse Drive south of Building III, and preclude use of the bathing beach. The beach is heavily used by a wide cross-section of the community. The people of Waukegan and the surrounding areas would lose a significant recreational resource for many years.

In addition, the use of the OMC Harbor-front property for dewatering lagoons would conflict with the development plans of the City of Waukegan and the Waukegan Port District for the Waukegan lakefront. The District has already asked OMC for use of this property for constructing boat launching facilities. The City also conducts numerous lakefront festivals at the public beach and currently uses this area, with OMC's permission, for parking. These activities would be precluded for at least two years, and perhaps for more than five years, while the dewatering lagoons remained open. Moreover, the highest and best use of this property would be as a recreational, housing and office complex associated with the City's and Port District's plans. Clearly, development would increase the property value by millions of dollars. Specific costs associated with the loss of these potential economic and other benefits to the City, Port District, public and OMC are not available for this document.

Conclusion Regarding OMC Site

In sum, construction and operation of an upland disposal facility at the OMC site would not only present many direct costs, such as a high cost of construction, but a very large number of indirect costs as well. Because of these many costs, including the interference with other planned uses of the subject property and the adverse effects on the availability and use of the beach area, an upland disposal area for the Waukegan Harbor sediments is not reasonable and appropriate.

This conclusion may be reached even without considering the serious effects that dredging the highly contaminated sediments in Slip 3 will have on the short- and long-term PCB load in the Harbor. These environmental considerations, which were discussed in OMC's June 30, 1987 submission to EPA, alone justify the conclusion that an upland disposal facility is not reasonable and appropriate. As requested by EPA, Section IV of this letter briefly reviews these environmental risks and

addresses certain questions raised by EPA concerning modifications to the dredging and other procedures involved in use of an upland disposal facility.

III. Costs and Risks Associated with Disposal at the Zion Site

Many of the costs and impacts presented by use of the Zion site for an upland disposal facility would be identical to those presented by use of the OMC site. Like the OMC site, use of the Zion site would entail extensive dredging, dewatering lagoons adjacent to the Upper Harbor, virtual dedication of access roads to the remedial action, etc. The key difference would be that certain areas on the OMC site would be excavated rather than used as disposal cells, the disposal cells would be constructed at the Zion site, and substantial fixation and transportation of the contaminated materials would be necessary.

This section briefly reviews the direct costs of constructing a PCB landfill at the Zion site. The discussion then moves on to the distinct risks associated with additional materials transportation and the permitting process for offsite disposal of PCB-contaminated material.

In addition to the high economic cost of an upland disposal facility at the Zion site, one of the most important points arises from the likely application of the state permitting process. As discussed below, unless OMC agreed to own or operate the Zion site and all non-OMC wastes were excluded, the Zion site would be subject to local approval, and litigation over any approval or denial would be likely to take several years. Because significant dredging, dewatering and excavation could not reasonably commence until the Zion site was approved and prepared to receive waste, any delay in approving the Zion site would stall the entire remedy.

A. Costs of Site Acquisition and Preparation

In 1984, the Corps of Engineers estimated the cost of acquiring land at the Zion site at about $8,400 per acre. This cost, even if accurate at the time, has probably increased over the past three years. We use the approximate figure of $10,000 per acre, for a land acquisition cost of $200,000 for 20 acres. Moreover, OMC has recently learned that Browning-Ferris, operator of an adjacent sanitary landfill, holds an option to purchase this property. The cost of

obtaining this option is unknown, and, therefore, is not included.

If the current owner and BFI refused to sell their interests in the property at a reasonable price, condemnation of the property would have to be considered. To obtain the right to use the property immediately, federal condemnation authorities would probably have to be used. Because EPA has not yet acquired any property pursuant to the new condemnation authorities granted by the 1986 amendments to CERCLA, such an action would be the first of its kind and therefore subject to special scrutiny. In all likelihood, delay would result.

If EPA were to condemn the property, the state would be required to accept transfer of EPA's property interest at the completion of the remedial action. 42 U.S.C § 9604(j)(2). If the state did not agree to accept such a transfer, EPA would lack the authority to acquire the property, and the remedial action could not proceed.

see pg 4

Canonie Engineering has estimated the cost of constructing and using a facility at the Zion site for the disposal of 266,795 yards of PCB-contaminated material. This volume includes fixation materials and disposal of contaminated portions of the dewatering lagoons. The required vault size was calculated to be 8 acres, with another 12 acres as a buffer and staging zone. Canonie assumed that trucks with a capacity of 15 cubic yards would be used, requiring 17,787 round trips (12 miles each way). As shown by Table III, the total cost for an upland disposal facility at the Zion site is about $37.6 million. If the disposal cell were to be increased to 11 acres to handle the additional 150,000 cubic yards of dredged spoil generated by the Corps of Engineers, the total cost would rise to $39,272,000.

B. Other Costs and Risks Concerning the Feasibility of Upland Disposal

In addition to the costs of disposing of dredged spoil, there are several risks presented by use of an off site facility. The added risk and uncertainties discussed in this section include: transporting the material to the Zion site; the likely permitting problem with the Zion site; and added inter-governmental issues raised by any joint Corps project.

Table III
(Continued)

Item	Action	Estimated Cost
5	Parking Lot Cleanup Area · General Site Preparation · Slurry Wall Construction · Dewatering Wells · Paving · Water Treatment · Excavation · Replacement With Clean Fill	4,154,000
6	Transportation Costs to Zion Site · 12 Miles · 266,795 cubic yards	2,049,000
7	Total Fixation Costs · Parking Lot Soils Not Fixed · Slip No. 3 Select Excavation "Sand" and all of Crescent Ditch/Oval Lagoon Soils Fixed with 13 Bags Cement/Yd. · All Dredged Materials Fixed with 16 Bags Cement/yd.	6,850,000
8	Off Site Vault Construction · $10,000 Acre Land Acquisition · Vault Complies with TSCA and RCRA Regulations	3,923,000
9	Incremental Off Site Vault Costs · Additional 150,000 cubic yards of Corps-dredged sediments	1,627,000
	TOTAL	$39,272,000

TABLE III

COST ESTIMATE
EXCAVATION AND DISPOSAL OF
ALL SOIL AND SEDIMENT GREATER THAN 50 PPM
PCBs AT AN UPLAND DISPOSAL SITE
12 MILES FROM THE OMC PROPERTY
FALL, 1986

Item	Action	Estimated Cost
1	Selected Excavation of Slip No. 3 · Isolation and Dewatering · Excavation · Water Treatment	$ 1,810,000
2	Slip No. 3 and Upper Harbor Dredging (Alternative 6D) · General Site Preparation · Dewatering Lagoon Construction · Curing Cell Construction · Cement Batch Plant · Water Treatment Plant · Silt Curtain · Dredging · Lagoon and Curing Cell Dismantling	9,980,000
3	North Ditch, Oval Lagoon, Crescent Ditch Cleanup (Alternative 4B) · General Site Preparation · Well Point System · Water Treatment · North Ditch Sheeting and Excavation · Storm Sewer Bypass · Excavation · Replacement With Clean Fill	8,298,000
4	Selected Excavation of Oval Lagoon and Crescent Ditch (Sub-Alternative 1) · Excavation	581,000

Transportation Risks

Because use of the Zion site would require transportation of large volumes of material over public streets, the risks of death and injury associated with such transportation must be considered in determining whether use of the Zion site would be reasonable and appropriate. Transportation of 267,000 cubic yards, in trucks with a 15-yard capacity, over a 24-mile round trip, results in 427,200 truck miles. The probability of a fatal accident, according to statistics compiled by the Department of Transportation, for a single unit truck on the type of road between the Site and the proposed Zion PCB landfill is 0.8×10^{-9} per mile. See, K. S. Crump, et al., "Risk Assessment for Polychlorinated Biphenyls for Outboard Marine Corporation Site" (hereafter "Risk Assessment"), p. 209-211. Therefore, the risk of a fatality during this project would be 3.42×10^{-4}. The probability of an accident of any kind (1.5×10^{-7} per mile) for the same route and mileage is approximately 6.41×10^{-2}, or over 6 percent. In comparison, each risk is more than double the corresponding risk of accident associated with shipping 11,200 yards of "hot spot" material to Williamsburg, Ohio (CECOS landfill). Id., p. 212.

These risks of accident due to transportation are representative risks, based on actual experience as reflected in DOT statistics. In contrast, the approach used to predict the incidence of excess cancers in the OMC Risk Assessment report is intended to provide an upper bound estimate of possible risk, rather than any statistical calculation of actual risk. Nevertheless, the actual probability of a fatality while transporting 267,000 cubic yards of contaminated material to Zion is far greater than the upper bound risk, obtained using multiple conservative assumptions, of one excess cancer associated with taking no action at the Site. Id., p. 214-220. In other words, transporting the material with PCB levels over 50 ppm to Zion poses a greater risk to human health than leaving those sediments and soils in place. This comparison has not factored in any risk of PCB release during transportation or after disposal at the upland facility.

Ramifications of the Permitting Process

A major issue in evaluating the Zion site is the ability of EPA or OMC to obtain the necessary local approvals for this facility. Unless OMC agrees to own, control or operate this facility and it was used solely for OMC wastes, or unless the State of Illinois were to conduct the clean-up pursuant to the

State Superfund law, local approvals would be necessary. Ill.Rev.Stat. ch. 111-1/2, § 1003(x).

The Zion site would constitute a new regional pollution control facility under Illinois law. Ill.Rev.Stat. ch. 111-1/2, § 1003(x). The Board of Supervisors of Lake County would have to be petitioned to authorize this use of the Zion site. The Lake County Board would hold public, adjudicatory hearings on the application to determine if the application met the siting criteria of the statute. Id., § 1039(c).

There are numerous jurisdictional prerequisites to filing an application with the Lake County Board. Adjoining landowners and specified government officials must be timely notified by certified and registered mail. In addition, newspaper notice precisely setting forth the legal description of the property must be published in a timely fashion. Id., § 1039.2(b), (c) and (d) (1986). These requirements are jurisdictional and, if not followed precisely, the local hearing decision is void. Kane County Defenders v. Pollution Control Board, 139 Ill.App.3d 588, 487 N.E.2d 743 (1985).

After the jurisdictional prerequisites were met, at the local hearing the applicant would be required to meet each of the following criteria:

1. The landfill is necessary to accommodate the waste needs of the area it is intended to serve;

2. The landfill is designed, located, and proposed to be operated so that the public health, safety and welfare will be protected;

3. The landfill is located so as to minimize incompatibility with the character of the surrounding area and to minimize the effect on the value of the surrounding area;

4. The landfill is located outside the boundary of the 100-year floodplain as determined by the Illinois Department of Transportation, or the site is floodproofed to meet the standards and requirements of the Illinois Department of Transportation and is approved by that Department;

5. The plan of operations for the landfill is designed to minimize danger to the surrounding area from fire, spills or other operational accidents;

6. The traffic patterns to or from the facility are so designed as to minimize the impact on existing traffic flow; and

7. If the landfill will be treating, storing or disposing of hazardous wastes, an emergency response plan exists for the facility which includes notification, containment and excavation procedures to be used in the case of an accidental release. Ill.Rev.Stat. ch. 111-1/2, § 1039.2(a) (1986).

To obtain local approval, each of the above-stated criteria must be satisfied. In the event any one of the criteria is not met, local approval may be denied. Also, note that criterion 7 applies only where the facility will be treating, storing or disposing of hazardous waste. Although PCBs might not be subject to criterion 7 because they are not "hazardous wastes" under federal law, it is likely that the local board would require OMC to satisfy the criterion 7 requirements in order to meet the public health, safety and welfare requirements contained in criterion 2.

It is likely to take at least four years to complete the local siting process. The hearing and decision of the local board must be completed within 180 days of the filing of the local siting application. After the local decision, any person or group who has participated before the County Board can appeal that decision to the Illinois Pollution Control Board within 35 days. The Pollution Control Board can be required to issue a decision within 120 days. Ill.Rev.Stat. ch. 111-1/2, § 1040.1 (1986). As a practical matter, however, in light of the extensive record typically developed before the County Board, Pollution Control Board review can take much longer.

The Pollution Control Board decision can then be appealed to the appellate court by any party. The appellate process is likely to take approximately two years. This time period results from the time required to file the appeal, submit the record to the appellate court, submit briefs and conduct oral argument, and obtain a decision from the appellate court.

Assuming that the decision of the local body or any of the reviewing bodies would be appealed is realistic. There have been several attempts to locate landfills in Lake County, none of which have been accepted by the Lake County Board. For example, A.R.F. Landfill and Waste Management have each filed local siting applications with the Lake County Board for hearings that were conducted during January and February, 1987. The Lake County Board denied each of these applications. In addition to denying the local siting applications, Lake County took an active role in opposing the local siting requests at the local level and in the pending appeals before the Pollution Control Board. A.R.F. v. Lake County, PCB 87-51 (appeal pending of denial of siting); A.R.F. v. Round Lake Park, PCB 87-34 (denial of siting request upheld, appeal filed); Waste Management v. Lake County, PCB 87-75 (appeal pending of denial of siting request). Based upon past experience with local siting in Lake County and Lake County's attitude in these matters, there is little doubt that Lake County would appeal a local siting decision to the Illinois Supreme Court. Therefore, it is reasonable to conclude that the local siting process would take a minimum of four years.

Effects on Cost and Feasibility of Combined OMC-Corps CDF Projects

EPA has asked OMC to estimate the effects of participation by the Corps of Engineers on the cost and feasibility of using an upland disposal facility at the Zion site. Although only preliminary discussions with the Corps were possible in the limited time available, several potential obstacles to such a joint project clearly exist.

Under Section 123 of Public Law 91-611 (1971), the Corps must have a local sponsor that is capable of providing certain assurances and agreements. The local sponsor must be a legally constituted public body with the full authority and capability to perform its agreement with the Corps. Among other things, the local sponsor would be required to furnish the property for the site and any needed easements. Thus, the local sponsor would have to purchase the Zion site or obtain it from EPA or the State following the latter's acquisition of the property. In addition, the local sponsor must agree to assume long-term liability for maintaining the facility after disposal has been completed, and may transfer title to another entity only if the transferee agrees to maintain the property satisfactorily.

The Corps was unable to locate a local sponsor in 1984. There is no reason to believe that a local sponsor would be any more willing to come forward in 1987, particularly if the subject facility were to include cells for disposal of more highly contaminated PCB materials.

The additional 150,000 cubic yards of dredge material would incrementally increase several of the costs, impacts, and risks previously outlined in this letter. For example, transportation of the additional 150,000 yards would increase the utilization of OMC access roads, and would add to the transportation risks noted previously.

If the Corps were to participate in disposing of dredged material at the Zion site, the local approval process outlined above would likely apply, because the site would be accepting from another jurisdiction wastes from a party that is not owning or operating the facility. See, Ill.Rev.Stat. ch. 111-1/2 § 1003(x). Thus, one of the most significant consequences of Corps participation could be the delay resulting from the need to obtain local approval.

A joint project between the Corps and OMC would add many issues and costs relating to delays in developing the necessary project elements. OMC has met with and asked representatives of the Corps whether there is any precedent for cost-sharing in the common phases of a joint project, and found that no precedent exists. In light of these many administrative and institutional differences and the Corps' inability to find a local sponsor in 1984, OMC would expect significant delays were the Zion upland disposal facility combined with the Corps' CDF project.

IV. The Efficacy and Cost of Modifications to the Record of Decision

A. Risks of Dredging

In addition to considerations of cost and administrative feasibility, EPA must determine whether environmental factors would make disposal in an upland facility not reasonable and appropriate. As pointed out in the Risk Assessment submitted to EPA on February 27, as well as in OMC's June 30 submission, dredging activities associated with any upland disposal facility would result in the continued exposure of PCBs to the water column in Waukegan Harbor.

Removal efficiences above 87% have not been documented for any dredging operation. Thus, a significant percentage of the contaminated sediments in Slip 3 would remain after dredging even under ideal conditions. The remaining PCBs would not be isolated from the Harbor, allowing continuing exposure to the water column.

In addition, because the dredging operation would remove much of the clean sediment now overlying the contaminated layers, the dredging operation could increase, rather than decrease, the exposure of PCBs to the water column. Once in the water column, the PCBs would be available for uptake by fish and eventual consumption by humans.

Moreover, the dredging process itself would result in resuspension of thousand of pounds of PCBs. As noted in OMC's June 30 submission, at least 2,139 pounds of PCBs would be resuspended by use of a cutter-head dredge, and about 12,700 pounds of PCBs would be resuspended by use of a non-watertight clamshell dredge. From 3,000 to 9,000 pounds of PCBs would be resuspended by use of a watertight clamshell. Even if the silt curtains prevent migration of PCBs immediately to the lower Harbor and the Lake, these materials would remain exposed for resuspension and transport to the Lake.

The substantial adverse impacts of dredging demonstrate that an upland disposal facility is not reasonable and appropriate, particularly because an alternative that does not rely on dredging is available to address the most serious areas of contamination. The IPC concept would not involve substantial dredging or other handling of sediments with contamination levels greater than 500 ppm; all of these sediments would be permanently isolated in place by a secure containment cell. Under the IPC proposal, only sediments with contamination in the range of 50 to 500 ppm would require dredging and dewatering for disposal; this residual range represents less than two percent of the total mass of PCBs in the Harbor.

B. Modifications to ROD

You also asked us to provide you with cost estimates for various changes to the Record of Decision in terms of dredging efficiency and dewatering. We understand you to be referring to three concepts raised in the EPA comments on the Risk

Assessment. Under separate cover, we have provided you with a reply to those comments. In sum, we believe that none of the concepts suggested is appropriate in the present context.

The EPA comments on the Risk Assesement suggested that additional dredging passes would improve dredging efficiency. As stated previously, OMC believes that the dewatering lagoons may not be large enough to contain even the dredged spoil from a single pass. OMC has also been advised by its consultants that dewatering and settling of the dredged materials will take much longer than expected in EPA's Conceptual Design. Therefore, OMC does not believe that additional dredging passes are feasible within the projected time period of one year for dredging and two years for dewatering. More dredging passes would not only add more time, but also more direct and indirect costs and other impositions on OMC, the other near-Harbor businesses, the City, and the local community.

The same EPA comments suggested that volatilization from the lagoons could be reduced by some sort of organic material applied as a cover on the lagoons. But the Conceptual Design assumed that the dredged spoil in the lagoons will be dewatered, to a significant degree, by evaporation. Conceptual Design, p. 2-19. Use of an organic material to cover the lagoons appears inconsistent with the recommendations of the Conceptual Design that a Riverine Utility Craft would be needed to break the crust on the spoil area to promote drainage. Id. OMC's engineers believe that use of an organic material will only lengthen the time for the dredged spoil to dewater in the lagoons. Moreover, if the presence of remedial contractor personnel in level C gear does not eliminate usage of the public beach, the smell of an organic material such as sewage sludge, which an EPA commenter suggested, will do so.

The other major comment by an EPA reviewer concerning dredging efficiency suggested that the sediments be covered with "clean material" after dredging was completed. If such "capping" is an acceptable method of burying contaminated PCBs, then OMC suggests that such an approach would be acceptable now, before any dredging. OMC believes that such an approach would pose no navigational problems, provided that a new slip is built for Larsen Marine as proposed in the IPC concept. We have not calculated the costs of such a capping alternative.